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AMWA

Water Rate Survey

Association of Metropolitan Water Agencies
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Compiled By:
Peat, Marwick, Main & Co.

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Preface

The Association of Metropolitan Water Agencies is pleased to publish the results of its Water Rate Survey. The responses to the survey were compiled by Peat, Marwick, Main & Co., who also assisted AMWA's Financial Affairs Committee in drafting the survey instrument. The responding organizations have diverse backgrounds and provided a wide range of data on their various water systems.

A total of 46 surveys were distributed and 29 major systems responded by providing information on various aspects of their rates and system characteristics. The data compiled should be of use for comparison purposes and provide general information about different systems across the country.

The Association's thanks go to the Financial Affairs Committee for their efforts in completing the survey instrument and to Peat, Marwick, Main & Co. for tabulating and summarizing the results. AMWA looks forward to periodic updates of this report, and to future participation by a greater number of members.

I. NARRATIVE SUMMARY

I. Narrative Summary

INTRODUCTION

The following Summary is based on data provided by 29 respondents to a Water Rate Survey conducted by the Association of Metropolitan Water Agencies (AMWA) in late 1986. The responses provide detailed information concerning rate structures and system characteristics of major water supply utilitites across the country, and are useful for comparative purposes. The data summarized in this section covers various aspects of the respondents' water rates and overall system characteristics Section II contains the tabulation of the survey responses used to prepare this summary.

A. GENERAL

Of the 29 organizations responding to the survey, 22 (75%) are structured as municipal utility departments. Two of the respondents operate as independent authorities while the others are either public corporations or municipal authorities.

The types of services provided by the respondents varies. The organizations that provide only water services total 11 or 38 percent. Another 15 (52%) also provide wastewater services. The remaining entities also provide services such as electricity and/or natural gas, or billing and/or collection assistance for other municipal services.

All of the responding organizations own and operate the transmission and distribution elements of their systems. In addition, 79 percent own and operate their source of supply element. Eight systems (28%) also own treatment facilities of some sort.

B. WATER SUPPLY SYSTEM

The system data collected from the surveys illustrates the diversity of those responding. Of the 27 respondents that provided data in this section, 92 percent provide retail services to the residential population in their respective areas. The range of retail populations served ranges from a high of 7 million to a low of 104,500. Slightly more than one-half of the systems providing retail services also provide wholesale water services to residential populations. Furthermore, two of the systems responding provide only wholesale residential services.

Interestingly, the largest provider of retail services also reported the highest number of connections (850,000). However, the organization which serves the greatest population on a wholesale basis (13 million), also reported the fewest number of connections (335). The data collected on the vintage of the respondents' supply and transmission systems varies widely. Sixteen of the 28 respondents to this question (57%) said that at least 30 percent of their system had been built since 1960. Two systems had over 80 percent built in that period. On the other hand, 14 entities (50%) reported that at least 30 percent of their systems were constructed prior to 1930. One respondent had 74 percent of their supply and transmission system built during this timeframe. Also, the data collected on the vintage of distribution systems show a similar range of responses.

The sizes of the work forces employed by the responding organizations ranges from a high of 2,000 (including shared administrative functions) to a low of 89 (no shared administrative operations). As might be expected, the work force composition for most of the systems is heavily concentrated in the plant operations and maintenance areas. Twenty-four out of twenty-seven surveys (89%) employ 45 percent or more of their work force in these two areas.

The information tabulated on water supply and delivery again illustrates the differences in the size of the organizations responding. The average daily water supplied ranges from a high of 1500 MGD's to a low of 27 MGD's. The same two systems also reported the highest and lowest daily safe yield (2900 and 32 MGD's) and peak deliveries of 2800 and 40 MGD's respectively.

The principal water sources of these organizations appear to be evenly distributed between reservoirs, groundwater and lakes or rivers. In most cases, the principal water source provides all or nearly all of the water to a system. Only one survey had an even distribution of water drawn from the above three noted sources. Also, only one system reported purchased water (10%) as a source.

Overall, the types of treatment reported were similar throughout the survey population. All but one system use chlorine as a part of their disinfection treatment. Among those systems using chlorine, three systems include chlorine dioxide, and one uses ozonation. Three employ some combination of treatments. The most frequently used other treatment is chloramines (5 systems). For viral removal, 75 percent of the systems use filtration. Very little treatment was reported for toxic waste removal. Three systems use air stripping, one employs GAC, and five report some other method used.

For turbidity removal, both chemical treatment and filtration are utilized. In treatment for taste and odor, 93 percent employ chlorination, and one system uses ozonation. Other treatments listed include potassium permanganate and activated carbon. For algae removal, 79 percent use filtration, seven systems also use copper sulfate as a treatment and none use microstraining

In treatment for color, 61 percent of the systems use chemical treatments and 71 percent use filtration. For fluoridation, 15 systems use fluosilic acid, one uses fluoride and three employ sodium silicate. In treating for corrosion control, nine systems use calcium oxide and three use sodium carbonate. Other treatments include caustic soda and sodium hexametaphosphate.

The topography and climates of the respondents service areas are also diverse. One item of note is that 76 percent of the surveys describe their systems as high density (population served).

C. CUSTOMER DATA

Twelve of the organizations in the survey offer discounts to their customers. The most frequently mentioned type of discounts are based on volume, such as declining block rates. Other discounts are given for low income, the elderly, certain religious and charitable institutions, municipal accounts, and for prompt payment. Most of the other customer data provided on the surveys did not lend itself to tabulation or summarization into general purpose information.

D. FINANCIAL

Of the 26 organizations that provided data on their revenue sources, 24 (92%) receive most of their revenue from user charges based on meter readings. Nine systems have revenue from flat rate charges for unmetered customers. Also, ten respondents receive revenue from system development charges. Most of the operations and maintenance budget data and captial improvement program budget data collected is useful for comparison purposes, but is not readily translated into general terms that can be summarized here.

The data received on outstanding bond obligations indicated that 15 of 29 entities (52%) have only revenue bonds outstanding. Six organizations (21%) have only general obligation bonds outstanding, and eight (28%) have a combination.

E. CUSTOMER BILLING DATA

The survey shows that 25 of the 27 utilities responding (93%) have a minimum charge for metered accounts. Eighty percent of the minimum charges are based on meter size. The other types of minimum charges are based on minimum allowances or periodic billing charges. The typical residential bills ranged from $16.12 (low usage) to $167.91 (high usage) on a quarterly basis. The quarterly commercial bills ranged from $75.54 (low usage) to $713.88 (high usage). Industrial bills ranged from $315.75 to $8,443.80 quarterly.

Approximately one-half of the systems surveyed have delinquency or non-payment problems. However, all of the respondents reported at least two alternative collection methods and in almost all cases the collection methods available were also put to use in collecting delinquent payments.

Rate differentials between inside city and outside city customers were reported on 19 of 29 surveys (66%). The premiums charged to outside city customers range from 6 percent to 200 percent. Three systems charge outside city customers as wholesale customers, making their assessment less than inside city customers. The most frequently used basis for a rate differential is cost of service calculations. Other differentials are based on historic costs, state statutes or local ordinances.

F. WATER METERS

In 22 of 28 systems reporting in this category, meters are owned and maintained by the utility. Five systems either share the duties, or are owned by the customer and maintained by the utility. The utility is responsible for reading meters in all but one system, where it is done by the Department of Revenue and Finance. Most meters are read either monthly, bi-monthly, or quarterly while only one system reads meters semi-annually. Also, another system reads industrial meters weekly.

Generally, the method of reading meters reported was either partial remote (i.e., handheld device) or manually, with most systems employing only one of these methods. Fifteen of the systems surveyed read meters manually, and nine utilities use a partial remote method. The remaining survey data on meters varies with the size and customer make up of each system.

II. TABULATION OF SURVEY RESPONSES

This section contains a series of tables which chart the responses received from the AMWA Water Rate Survey. In some cases the responses could not be tabulated entirely or in the same form due to formatting restrictions.

AMWA RATE SURVEY

A. GENERAL

	ORGANIZATION NAME	FORM COMPLETED BY:	TITLE	TELEPHONE	ORGANIZATIONAL STRUCTURE	SERVICES PROVIDED	ELEMENTS OWNED & OPERATED: SOURCE OF SUPPLY	TRANS-MISSION	DISTRI-BUTION	OTHER - DESCRIBE
1	PHILADELPHIA WATER DEPT.	ROY ROMANO	PROJECT ENG	(215) 592-6321	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER		X	X	
2	CITY OF ATLANTA BUREAU OF WATER	ROB RIVERS	DIRECTOR	(404) 658-6580	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER		X	X	
3	METRO. WATER DISTRICT OF SO.CALIFORNIA	DANIEL ASKENAIZER	WATER QUALITY SPECIALIST	(213) 250-6017	PUBLIC CORPORATION	WATER ONLY		X	X	RESERVOIRS
4	SEATTLE WATER DEPARTMENT	THOMAS E. SPRING	ASST SUPERINTENDENT	(206) 620-9116	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	
5	OAHU BOARD OF WATER SUPPLY	KAZU HAYASHIDA	MANAGER & CHIEF ENGINEER	(808) 527-6180	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	
6	ANCHORAGE WATER & WASTEWATER UTILITY	JEAN RUPPERT	GENERAL MANAGER	(907) 786-5506	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER		X	X	
7	CITY OF TUCSON WATER DEPARTMENT	ERIC UNANGST	FINANCIAL MANAGER	(602) 791-4331	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	RECLAIMED TREATMENT PLANT
8	TAMPA WATER DEPARTMENT	THOMAS B. KOGAS	CHIEF PLANNING ENGINEER	(813) 223-8676	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	
9	EAST BAY MUNICIPAL UTILITY DISTRICT	D.B. BISHOP	MANAGEMENT ANALYST	(415) 835-3000	DISTRICT AUTHORITY	WATER & WASTEWATER	X	X	X	
10	FORT WORTH WATER DEPARTMENT	MICHAEL J. MATHEWS	DESIGN ENGINEER	(817) 870-8240	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER		X	X	
11	LOUISVILLE WATER CO.	FOSTER S. BURBA	PRESIDENT	(502) 569-3600	INDEPENDENT AUTHORITY	WATER & COLLECT SEWER CHARGES		X	X	TREATMENT
12	MEMPHIS LIGHT, GAS & WATER DIVISION	BILL GRIMM	MGR OF WATER OPERATIONS	(901) 320-1532	MUNICIPAL UTILITY DEPT	WATER, ELECTRICITY, NAT'L GAS	X	X	X	
13	KNOXVILLE UTLITIES BOARD, BUR OF WATER	J.M. BURKA	CHIEF ENGINEER	(615) 521-8579	MUNICIPAL AUTHORITY	WATER ONLY	X	X	X	
14	DEPT OF ENVIRONMENTAL PROTECTION-NYC	JOSEPH P. CONWAY, PE	DIR., BUR. OF WTR SUPPLY,	(212) 971-6796	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER	X	X	X	STRG&TREAT,CAP.FIN.,RATE SET'G
15	CITY OF SAN BERNADINO MUNIC WATER DEPT	BERNARD C. KERSEY	DIRECTOR, ADMIN & FINANCE	(714) 383-5393	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER	X	X	X	
16	TULSA METROPOLITAN WATER AUTHORITY	JOYCE H. ALLEN	MGR OF ADMIN SERVICES	(318) 588-9405	MUNICIPAL AUTHORITY	WATER & BILLING FOR OTHER UTIL	X	X	X	AUTH LEASES FOR CITY OF TULSA
17	DETROIT WATER & SEWERAGE DEPT	WILLIAM B. CARNEY	FINANCIAL MANAGER	(313) 224-4795	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER	X	X	X	TREATMENT, 5 PLANTS
18	THE METROPOLITAN DISTRICT (MDC) HARTFORD	TODD H. ROSENTHAL	EXEC ASST TO DIST MANAGER	(203) 278-7850	STATE CHARTERED MUN CORP	WATER WASTEWATER POWER & MORE	X	X	X	
19	DEPT OF UTILITIES, NORFOLK, VIRGINIA	R. EDWIN BLAIR, JR.	DIR OF UTILITIES	(804) 441-2676	MUNICIPL UTILITY DEPT	WATER & WASTWATR & SEWGE COL	X	X	X	TREATMENT PLANTS
20	SALT LAKE CITY DEPT OF PUBLIC UTILITIES	WENDELL E. EVENSEN	WATER SUPERINTENDENT	(801) 483-6772	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER	X	X	X	TREATMENT & STORAGE
21	CITY OF AKRON, PUBLIC UTILITIES BUREAU	FRED M. DeBELLIS	UTILITIES DEPUTY ENG	(216) 375-2690	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER	X	X	X	
22	WATER WORKS BOARD OF THE CITY OF BIRMINGHAM	GENE R. HANSON	ASST GENERAL MGR	(205) 251-3261	INDEPENDENT AUTHORITY	WATER ONLY	X	X	X	
23	KANSAS CITY, MO WATER AND POLLUTN CONTRL	ROY L. JACKSON	DIRECTOR	(816) 274-2376	MUNICIPAL UTILITY DEPT	WATER & WASTEWATER	X	X	X	WASTEWATER TREATMNT
24	DEPT OF WATER & POWER, CITY OF L. A.	CARLOS V. SOLORZA	DIRECTOR, WTR ADM SVCS	(213) 481-5938	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	
25	PORTLAND BUREAU OF WATERWORKS	KAREN BUNK	FINANCIAL ANALYST	(503) 796-7416	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	
26	DENVER WATER DEPT	ROBERT TOMLINSON	RATE ANALYST	(303) 628-6417	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	TREATMENT
27	CITY OF TACOMA, DEPT OF PUBL UTIL, WTR DIV	JANE EVANCHO	CIVIL ENGINEER	(206) 383-2471	MUNICIPAL UTILITY DEPT	WATER ONLY	X	X	X	
28	DALLAS WATER UTILITIES	DENNIS T. CAVE	DEP DIR WATER OPER.	(214) 670-8665	MUNICIPAL UTILITY DEPT	WATER AND WASTEWATER	X	X	X	
29	ANNE ARUNDEL COUNTY DEPT OF UTILITIES	JAMES M. HURLEY, DPA	CHIEF BUR OF ADMIN & FIN	(301) 760-7740	MUNICIPAL UTILITY DEPT	WATER AND WASTEWATER	X	X	X	

AMWA RATE SURVEY

	SYSTEM DATA: CURRENT SERVICE AREA WHOLESALE (SQ. MILES)	CURRENT SERVICE AREA RETAIL (SQ. MILES)	RESIDENTIAL POPULATION SERVED WHOLESALE	RESIDENTIAL POPULATION SERVED RETAIL	NO. OF CONNECTIONS	VINTAGE OF SUPPLY & TRANSMISSION SYSTEM: PRE 1890 (%)	1890 - 9 (%)	1900 - 9 (%)	1910 - 9 (%)	1920 - 9 (%)	1930 - 9 (%)	1940 - 9 (%)	1950 - 9 (%)	1960 - 9 (%)	1970 - 9 (%)	1980 (%)
1 PHILA.	135.0			1,813,210	127,000								30.0%	65.0%	5.0%	
2 ATLANTA	635.0		300,000	700,000	127,000	50.0%				25.0%					25.0%	
3 SO. CAL.	5,200.0		13,000,000		335						30.0%	10.0%	10.0%	30.0%	10.0%	10.0%
4 SEATTLE			560,000	540,000	170,000	[----------		33.0%----------		]	33.0%	[----------		33.0%	----------]	
5 OAHU	617.6		819,700		133,040	0.0%	0.2%	0.2%	0.2%	2.1%	1.0%	3.0%	7.7%	11.1%	43.4%	31.1%
6 ANCHORAGE		2,006.0		185,600	38,045	0.0%	0.0%	0.0%	0.0%	1.0%	1.5%	5.0%	10.0%	15.0%	30.0%	38.5%
7 TUCSON		260.0		500,000	142,477	0.0%	0.0%	2.0%	3.0%	5.0%	5.0%	5.0%	10.0%	25.0%	25.0%	20.0%
8 TAMPA		211.0		425,000	108,407	0.0%	0.0%	10.0%	5.0%	40.0%	5.0%	5.0%	5.0%	5.0%	20.0%	5.0%
9 EAST BAY	0.0	314.0	0	1,100,000	340,000		9.0%		33.0%			25.0%			30.0%	3.0%
10 FT WORTH	0.0	230.0	250,000	450,000	150,000					10.0%	15.0%	15.0%	30.0%		15.0%	15.0%
11 LOUISVILL	5.5	354.0		683,109	201,794	5.0%	2.0%	4.0%	3.0%	7.0%	7.0%	3.0%	9.0%	29.0%	24.0%	7.0%
12 MEMPHIS	465.0	290.0	100,000	700,000	203,000					15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
13 KNOXVILLE		108.0		195,000	58,200	2.0%	4.0%	5.0%	8.0%	12.0%	2.0%	5.0%	8.0%	20.0%	16.0%	12.0%
14 NEW YORK	N/A	304.0	800,000	7,000,000	850,000	10.0%		10.0%	30.0%		10.0%		20.0%	20.0%		
15 SAN BERN.		49.8		104,222	34,000					36.0%	7.3%	11.2%	21.9%	9.0%	6.6%	7.9%
16 TULSA		200.0		500,000	145,813					14.0%		14.0%	28.0%		14.0%	29.0%
17 DETROIT	2,000.0	140.0	2,700,000	1,200,000	300,000	5.0%	5.0%	5.0%	10.0%	30.0%	2.0%	6.0%	12.0%	12.0%	1.0%	2.0%
18 HARTFORD	24.0	225.0	5,000	400,000	87,000	2.0%	2.0%	0.0%	22.0%	7.0%	5.0%	27.0%	8.0%	15.0%	8.0%	2.0%
19 NORFOLK	400.0	70.0	420,000	280,000	175,000	5.0%	5.0%	1.0%	1.0%	5.0%	3.0%	10.0%	30.0%	10.0%	20.0%	10.0%
20 SALT LAKE		123.0		264,000	82,000	0.0%	7.8%	4.2%	5.4%	3.5%	7.8%	15.7%	22.4%	10.4%	13.8%	8.9%
21 AKRON	30.5	67.3	45,000	265,000	78,339				35.0%	32.0%			21.0%	12.0%		
22 BIRMINGHM		4.1			163,910		4.2%	4.7%	6.0%	13.3%	1.5%	3.5%	11.4%	18.8%	30.4%	6.2%
23 KANSAS CY	NOT KNOWN	314.0	121,800	448,000	134,000	0.0%	0.0%	1.0%	5.0%	40.0%		10.0%	30.0%	5.0%	5.0%	4.0%
24 LOS ANG.	465.0				588,500	0.2%	0.3%	3.5%	11.8%	12.2%	18.9%	6.4%	23.3%	15.8%	5.9%	1.7%
25 PORTLAND	100.0	100.0	100,000	560,000	131,926		10.0%	2.0%	10.0%	15.0%	4.0%	4.0%	10.0%	15.0%	10.0%	20.0%
26 DENVER						5.0%		30.0%			30.0%		[----------25%----------]		[----------10%----------]	
27 TACOMA		59.1	25,000	175,000	71,201	0.0%	0.0%	1.0%	5.8%	23.8%	25.2%	15.7%	13.6%	3.2%	9.7%	2.4%
28 DALLAS	335.0	378.0	959,800	941,700	262,442	[----------20%----------				]	[----------65%----------			]	[---------- 15%----------]	
29 ANNE ARUN		180.0		176,000	67,000											

	VINTAGE OF DISTRIBUTION SYSTEM										
	PRE 1890 (%)	1890 - 9 (%)	1900 - 9 (%)	1910 - 9 (%)	1920 - 9 (%)	1930 - 9 (%)	1940 - 9 (%)	1950 - 9 (%)	1960 - 9 (%)	1970 - 9 (%)	1980 (%)
1 PHILA.	18.9%	15.3%	8.4%	7.4%	14.8%	2.4%	5.7%	12.0%	9.8%	4.3%	
2 ATLANTA	15.0%	10.0%	10.0%	10.0%	10.0%	10.0%	5.0%	15.0%	5.0%	5.0%	5.0%
3 SO. CAL.						30.0%	10.0%	10.0%	30.0%	10.0%	10.0%
4 SEATTLE	[----------		50.0%----------			----------	]	[----------		50.0%----------	----------]
5 OAHU	0.3%	0.0%	0.3%	0.1%	1.2%	1.3%	2.7%	10.4%	22.1%	31.2%	30.3%
6 ANCHORAGE	0.0%	0.0%	0.0%	0.0%	1.0%	1.5%	5.0%	10.0%	15.0%	30.0%	38.5%
7 TUCSON	0.0%	0.0%	2.0%	3.0%	5.0%	5.0%	5.0%	10.0%	25.0%	25.0%	20.0%
8 TAMPA	0.0%	0.0%	20.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
9 EAST BAY	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10 FT WORTH				[PRE 1929---9% -----	]	15.0%	12.0%	26.0%	11.0%	12.0%	14.0%
11 LOUISVILL	3.0%	2.0%	4.0%	3.0%	8.0%	4.0%	5.0%	13.0%	36.0%	17.0%	5.0%
12 MEMPHIS					5.0%	10.0%	10.0%	20.0%	25.0%	15.0%	15.0%
13 KNOXVILLE											
14 NEW YORK	6.4%	4.6%	8.3%	16.0%	18.2%	12.3%	7.8%	10.1%	8.8%	5.2%	2.3%
15 SAN BERN.											
16 TULSA					10.0%	5.0%	5.0%	10.0%	20.0%	30.0%	20.0%
17 DETROIT	15.0%	5.0%	7.0%	10.0%	30.0%	3.0%	15.0%	15.0%			
18 HARTFORD	5.0%	7.0%	1.0%	9.0%	10.0%	5.0%	16.0%	19.0%	25.0%	1.0%	2.0%
19 NORFOLK	1.0%	1.0%	5.0%	10.0%	10.0%	10.0%	20.0%	20.0%	15.0%	5.0%	3.0%
20 SALT LAKE	2.0%	9.0%	8.0%	6.0%	5.0%	8.0%	17.0%	17.0%	17.0%	7.0%	4.0%
21 AKRON	1.4%	1.9%	3.5%	18.1%	26.4%	7.5%	5.0%	12.0%	10.7%	11.4%	2.8%
22 BIRMINGHM											
23 KANSAS CY	4.0%	6.0%	11.0%	9.0%	8.0%	6.0%	2.0%	11.0%	30.0%	8.0%	5.0%
24 LOS ANG.	0.1%	0.3%	2.1%	4.1%	21.2%	12.8%	10.9%	23.1%	16.6%	7.5%	1.5%
25 PORTLAND		19.0%	18.0%	18.0%	18.0%	6.0%	6.0%	6.0%	3.0%	3.0%	3.0%
26 DENVER	5.0%		30.0%			30.0%		[----------25%------	]	[----------10%------	]
27 TACOMA	[----------2%------	]	[----------5%------	]	[----------12%------	]	[----------31%------	]	[----------49%----------		]
28 DALLAS	[----------20%----------		]	[----------65%----------		]	[---------- 15%------	]			
29 ANNE ARUN											

AMWA RATE SURVEY

	CURRENT SYSTEM WORKFORCE		COMPOSITION OF WORKFORCE									
	HEADCOUNT	ADMIN. INCLUDED ?	PLANT OPERATIONS	MAINTENANCE	ENGINEERING	FINANCE	CUSTOMER SERVICE	ADMIN.	OTHER (%)	OTHER (DESCRIBE)	OTHER (%)	OTHER (DESCRIBE)
1 PHILA.	843	Yes	30.0%	22.0%	22.0%	10.0%	6.0%	10.0%				
2 ATLANTA	768	No	30.0%	45.0%	5.0%		15.0%	5.0%				
3 SD. CAL.	1,518	Yes	58.0%		13.0%	3.0%		17.0%	4.0%	RESOURCES & PLANNING,	4.0%	WATER QUALITY
4 SEATTLE	450	Yes	7.0%	44.0%	13.0%	9.0%	20.0%	2.0%	4.0%	WATERSHED MANAGEMENT		
5 OAHU	632	Yes	11.0%	42.0%	17.0%	10.0%	9.0%	4.0%	4.0%	AUTOMOTIVE	3.0%	COMPUTER SERVICE
6 ANCHORAGE	307	No	20.0%	43.0%	20.0%	17.0%						
7 TUCSON	410	Yes	22.2%	27.8%	17.3%	2.4%	8.3%	2.0%	17.6%	METERING SERVICES	2.4%	WTR QUALITY & PUBLIC INFO
8 TAMPA	250	Yes	39.0%	42.0%	11.0%	2.0%	2.0%	4.0%				
9 EAST BAY	1,375	Yes	17.0%	38.0%	17.0%	1.0%	10.0%	17.0%				
10 FT WORTH	518	Yes	48.0%	4.0%	17.0%		20.0%	11.0%				
11 LOUISVILL	454	Yes	33.3%	12.6%	10.4%	3.1%	10.0%	15.0%	15.6%	CLERICAL/ADMIN SUPPORT		
12 MEMPHIS	2,800	Yes	10.0%	20.0%	10.0%	20.0%	20.0%	20.0%				
13 KNOXVILLE	252	Yes	17.0%	70.0%	9.0%		4.0%					
14 NEW YORK	1,554	No	9.3%	40.3%	21.1%	SEP AGENCY	SEP BUREAU	5.9%	20.0%	SOURCES - RESERVOIRS	3.7%	QUALITY CONTROL
15 SAN BERN.			6.0%	32.0%	10.0%	4.0%	21.0%	6.0%	21.0%			
16 TULSA	490	No	24.0%	42.0%	8.0%	4.0%	18.0%	4.0%				
17 DETROIT	1,800	Yes	13.8%	33.3%	16.7%	4.4%	8.3%	1.1%	19.4%	MAINTENANCE	2.8%	REMOTE DISTRIBUTION
18 HARTFORD	600	Yes										
19 NORFOLK	380	Yes	25.0%	35.0%	10.0%	5.0%	15.0%	10.0%				
20 SALT LAKE	278	Yes	15.8%	50.9%	8.0%	4.9%	12.6%	2.8%	3.2%	IRRIGATION CANALS	1.8%	WATER RESOURCES
21 AKRON	272	Yes	23.1%	50.3%	9.1%	2.9%	11.0%	3.3%				
22 BIRMINGHM	327	Yes	23.3%	5.5%	4.6%	6.7%	17.7%	9.8%	32.4%	CONST & MAINT & METR SHOP		
23 KANSAS CY	530	Yes										
24 LOS ANG.	2,630	Yes	[----------58%-------]		7.0%	[----------14%-------]		10.0%	11.0%	LOS ANGELES AQUEDUCT		
25 PORTLAND	429	Yes	[----------63%-------]		14.0%	4.0%	13.0%	4.0%	2.0%	COMPUTER SERVICES		
26 DENVER	1,049	Yes	[----------48%-------]		14.0%	4.0%	10.0%	15.0%	9.0%	PLANNING, LEGAL		
27 TACOMA	158	Yes	71.0%		27.0%			2.0%				
28 DALLAS	1,922	No	13.3%	36.0%	10.4%	1.8%	5.3%	9.3%	23.1%	METERS, PLANNING, ADMIN		
29 ANNE ARUN	89	No	39.0%	21.0%				4.0%	35.0%	WATER LINE MAINTENANCE		

AMWA RATE SURVEY

	AVG DAILY WTR SUPPLIED (MGD)	SYSTEM DAILY SAFE YIELD (MGD)	PEAK DAILY DELIVERY (MGD)	PER CAPITA AVG DAILY CONSUMPTION (GALL)	PRINCIPAL WATER SOURCES: RESERVOIRS (%)	GROUNDWTR (%)	LAKES/RIVERS (%)	PURCHASED (%)	DISINFECTION: CHLORINE	CHL. DIOXIDE	OZONATION	COMBINATION	OTHER (DESCRIBE)	VIRAL REMOVAL: FILTRATION	OZONATION	OTHER (DESCRIBE)	TOXIC WASTE REMOVAL: AIR STRIPPING	GAC	OTHER (DESCRIBE)
1 PHILA.	321.4		379.1	177.0			100.0%		Yes	Yes	No	Yes	No	Yes	No	CHLORINATION	No	No	CLOSE INTAKE
2 ATLANTA	125.0	165.0	167.0	125.0			100.0%		Yes	No	No	No	POTASH PERM	Yes	No	No	No	No	ACTIV CARBON
3 SO. CAL.	1,500.0	2,900.0	2,800.0	N/A	100.0%				No	No	No	No	CHLORAMINES	No	No	No	No	No	No
4 SEATTLE	165.0	169.0	350.0	120.0	100.0%				Yes	No	No	No	No	No	No	WTRSHD CONTR	No	No	WTRSHD CONTR
5 OAHU	137.2	135.0	159.5	173.0		99.0%	1.0%		Yes	No	No	No	No	Yes	No	No	No	Yes	No
6 ANCHORAGE	28.0	40.0	48.0	120.0		40.0%	60.0%		Yes	No	No	No	No	Yes	No	No	No	No	No
7 TUCSON	72.3	165.5	127.7	150.0		100.0%			Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8 TAMPA	64.0	99.0	92.0	160.0	75.0%	25.0%			Yes	No	No	Yes	AMMONIA	Yes	No	No	No	No	No
9 EAST BAY	213.0	N/A	325.0	177.0	5.0%		95.0%		Yes	No	No	No	CHLORAMINES	Yes	No	SEDIMENTATN	No	No	No
10 FT WORTH	125.7	200.0	248.0	180.0	99.0%	1.0%			Yes	No	No	No	No	Yes	No	No	No	No	No
11 LOUISVILL	113.4	270.0	158.6	166.0			100.0%		Yes	No	No	No	CHLORAMINES	Yes	No	CHLORINATION	No	No	No
12 MEMPHIS	130.0	201.0	378.0	280.0		100.0%			Yes	No	No	No	No	No	No	No	No	No	No
13 KNOXVILLE	32.0	50.0	42.0	164.0			100.0%		Yes	No	No	No	No	Yes	No	No	No	No	No
14 NEW YORK	1,395.0	1,290.0	2,036.0	204.0	100.0%				Yes	No	No	No	No	No	No	No	No	No	No
15 SAN BERN.	34.3	71.6	58.9	210.0	3.2%	96.8%			Yes	No	No	No	No	Yes	No	No	Yes	No	No
16 TULSA	91.8	150.0	170.0	200.0	100.0%				Yes	No	No	No	No	Yes	No	No	No	No	No
17 DETROIT	650.0	150.0	1,100.0	165.0			100.0%		Yes	No	No	No	No	Yes	No	No	No	No	No
18 HARTFORD	58.6	66.0	85.0	135.0	100.0%				Yes	No	No	No	No	Yes	No	No	No	No	AERATION
19 NORFOLK	75.0	82.0	100.0	107.0	40.0%	10.0%	50.0%		Yes	Yes	No	No	No	Yes	No	No	No	No	No
20 SALT LAKE	92.0	246.0	220.0	312.0	15.3%	14.4%	70.3%		Yes	No	No	No	No	Yes	No	No	No	No	No
21 AKRON	45.1	57.0	57.0	105.0	100.0%				Yes	Yes	No	No	No	Yes	No	No	No	No	No
22 BIRMINGHM	93.4	155.0	142.2		60.0%		40.0%		Yes	No	No	No	No	Yes	No	No	No	No	No
23 KANSAS CY	109.0	250.0	300.0	145.0	0.0%	15.0%	85.0%		Yes	No	No	No	CHLORAMINES	Yes	No	LIME SOFT'NG	No	No	PAC
24 LOS ANG.	613.0	500-600	912.0	195.0	0.0%	15.0%	75.0%	10.0%	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	No	No
25 PORTLAND	112.0	205.0	257.0	160.0	98.0%	2.0%			Yes	No	No	No	CHLORAMINES	No	No	No	No	No	No
26 DENVER	208.0	660.0	491.0	233.0	[----------99%----------]				Yes	No	No	No	No	Yes	No	No	No	No	No
27 TACOMA	76.1	125.0	134.3	224.0		11.0%	89.0%		Yes	No	No	No	No	No	No	No	Yes	No	No
28 DALLAS	316.0	318.4	594.0	238.0	100.0%				Yes	No	No	No	No	Yes	No	No	No	No	No
29 ANNE ARUN	27.3	32.0	40.0		10.0%	90.0%			Yes	No	No	No	No	No	No	No	No	No	No

AWWA RATE SURVEY

	TURBIDITY REMOVAL			TASTE AND ODOR			ALGAE REMOVAL			COLOR			FLUORIDATION		CORROSION CONTROL		
	CHEM. TREAT.	FILTRATION	OTHER (DESCRIBE)	CHLORINATION	OZONATION	OTHER (DESCRIBE)	FILTRATION	MICRO STRAIN	OTHER (DESCRIBE)	CHEM. TREAT.	FILTRATION	OTHER (DESCRIBE)	FLUOS. ACID	OTHER (DESCRIBE)	CALCIUM OXIDE	SODIUM CARB.	OTHER (DESCRIBE)
1 PHILA.	Yes	Yes	SEDIMENTATN	Yes	No	CHLR/CLS INT	Yes	No	No	Yes	Yes	No	Yes	FLOURIDE	No	No	PH CONTROL
2 ATLANTA	Yes	Yes	No	Yes	No	CARBON	Yes	No	ACTIV CARBON	No	Yes	No	N/A	N/A	N/A	N/A	N/A
3 SO. CAL.	Yes	Yes	No	Yes	No	CuSo4. 5 H2O	Yes	No	COPPER SULF.	No	No	No	No	No	No	No	CAUSTIC SODA
4 SEATTLE	No	No	WTRSHD CONTR	Yes	No	No	No	No	CALCM HYPOCL	No	No	N/A	Yes	No	Yes	Yes	No
5 OAHU	No	Yes	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	No	No
6 ANCHORAGE	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	No	No	SODIM/SILICA	No	No	HYDRATE LIME
7 TUCSON	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8 TAMPA	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	SEDIMENTATN	No	No	No	No	No
9 EAST BAY	Yes	Yes	SEDIMENTATN	Yes	No	POTASS/CARBN	Yes	No	SEDM/CPR SLF	Yes	Yes	No	Yes	No	Yes	No	CAUSTIC SODA
10 FT WORTH	Yes	Yes	No	Yes	No	PERMANG/GAC	Yes	No	No	No	Yes	No	Yes	No	Yes	Yes	No
11 LOUISVILL	Yes	Yes	No	Yes	No	ACTIV CARBON	Yes	No	COPPER SULF.	Yes	Yes	No	No	HYDROFL ACID	Yes	Yes	CARBN DIOXID
12 MEMPHIS	No	Yes	No	No	No	AERATION	No	No	No	No	No	No	Yes	No	No	No	SODM HEXAMET
13 KNOXVILLE	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Yes	No	No	No	ZINC POLYPHO
14 NEW YORK	No	No	ALUM IF NEC.	Yes	No	No	No	No	COPPER SULF.	No	No	No	Yes	No	No	No	CAUSTIC SODA
15 SAN BERN.	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	No	No	No	No	No	No
16 TULSA	Yes	Yes	No	Yes	No	Yes	Yes	No	No	No	No	No	Yes	No	Yes	No	No
17 DETROIT	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Yes	No	No	No	No
18 HARTFORD	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	No	Yes	SODIM/SILICA	Yes	No	SODM HEXAMET
19 NORFOLK	Yes	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	No	No	Yes
20 SALT LAKE	Yes	Yes	No	Yes	No	POTASS PERM	Yes	No	COPPER SULF.	Yes	Yes	No	No	No	No	No	No
21 AKRON	Yes	Yes	SEDIMENTATN	Yes	No	ALUM	Yes	No	COPPER SULF.	Yes	Yes	No	Yes	No	No	No	SODM HYDROX
22 BIRMINGHM	Yes	Yes	No	Yes	No	ACTIV CARBON	Yes	No	No	Yes	Yes	No	Yes	No	Yes	No	No
23 KANSAS CY	Yes	Yes	SEDIMENTATN	Yes	No	PAC KMNO4	Yes	No	COAGULATION	Yes	No	No	Yes	No	Yes	No	SODM HEXAMET
24 LOS ANG.	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No	No	No	No
25 PORTLAND	No	No	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No
26 DENVER	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	Yes	No	No	SODIM/SILICA	Yes	No	No
27 TACOMA	No	No	No	Yes	No	COPPER SULF.	No	No	COPPER SULF.	No	No	No	No	No	No	No	No
28 DALLAS	Yes	Yes	No	Yes	No	ACTIV CARBON	Yes	No	No	Yes	Yes	No	Yes	No	No	No	No
29 ANNE ARUN	No	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes	No	No	No	No

AWWA RATE SURVEY

	SYSTEM TOPOGRAPHICAL & CLIMATE DESCRIPTION						CUSTOMER WATER USAGE						
	FLAT	HILLY	HIGH DENSITY	LOW DENSITY	COLD WEATHER	WARM WEATHER	WHOLESALE (%)	RESIDENTIAL (%)	COMMERCIAL (%)	INDUSTRIAL (%)	OTHER (%)	DISCOUNTS OFFERED	DESCRIBE
1 PHILA.	Yes	Yes	Yes		Yes	Yes	6.8%	55.6%	13.7%	9.9%	14.0%	Yes	25% OFF TO LARGE USERS, SENIOR CITIZENS
2 ATLANTA		Yes	Yes			Yes		65.0%	20.0%	15.0%			
3 SO. CAL.	Yes		Yes			Yes	100.0%						
4 SEATTLE		Yes	Yes					64.0%	12.0%	13.0%	11.0%	Yes	REBATE FOR LOW INCOME, ENROLLED ELDERLY
5 OAHU		Yes	Yes			Yes	0.0%	25.0%	15.0%	20.0%	40.0%	No	
6 ANCHORAGE		Yes	Yes		Yes			86.0%	9.0%	1.0%		No	
7 TUCSON	Yes	Yes	Yes	Yes		Yes		69.6%	25.4%	2.9%	2.1%	Yes	FOR USERS OF RECLAIMED WASTEWATER FOR IRRIGATION
8 TAMPA	Yes		Yes			Yes	0.0%	51.0%	18.0%	31.0%		Yes	IN COUNTY BASED ON AUDITED COSTS
9 EAST BAY	Yes	Yes	Yes	Yes	Yes	Yes	0.0%	60.0%	17.0%	15.0%	8.0%	Yes	$1.00 PER/MO DISCOUNT IF CONSUMPTION)900 CU FT
10 FT WORTH	Yes		Yes			Yes	0.4%	35.4%	25.6%	10.6%	28.0%	No	
11 LOUISVILLE	Yes	Yes	Yes		Yes		2.4%	41.5%	30.2%	22.1%	3.8%	No	
12 MEMPHIS	Yes		Yes			Yes						Yes	COMMERCIAL RATE FOR BUSINESS CUSTOMERS
13 KNOXVILLES		Yes		Yes			0.0%	49.0%	47.0%	4.0%		No	
14 NEW YORK	Yes		Yes		Yes		7.0%	46.0%	13.0%	4.0%	30.0%	Yes	SOME RELIG. & CHARITY ORG. FULLY/PART'LY EXEMPT
15 SAN BERN.	Yes	Yes	Yes	Yes		Yes		54.0%	31.0%	1.0%	14.0%	Yes	MUNICIPAL ACCOUNTS
16 TULSA		Yes	Yes			Yes	6.2%	44.2%	18.9%	28.9%	1.8%	No	
17 DETROIT	Yes			Yes	Yes		59.0%	[----------17%-------]		11.0%	13.0%	Yes	DECLINING BLOCK RATES
18 HARTFORD		Yes	Yes		Yes		0.1%	54.3%	21.8%	16.4%	6.9%	Yes	RATES DECLINE WITH INCREASED VOLUME
19 NORFOLK	Yes						45.0%	16.0%	13.0%	13.0%	13.0%	No	
20 SALT LAKE		Yes		Yes	Yes							No	
21 AKRON		Yes	Yes		Yes		11.2%	47.0%	17.1%	23.9%	0.8%	No	
22 BIRMINGHM		Yes	Yes			Yes	0.2%	85.4%	7.6%	0.1%	6.7%	No	
23 KANSAS CY		Yes	[----------BLEND----------]				14.0%	25.0%	16.0%	20.0%	25.0%	Yes	GRADUATED REDUCTION BASED ON VOLUME
24 LOS ANG.		Yes	Yes			Yes		34.0%	[----------53%-------]		13.0%	No	
25 PORTLAND		Yes	Yes		Yes		37.6%	33.4%	28.7%	0.2%	0.1%	No	
26 DENVER	Yes	Yes		Yes	Yes			53.0%	32.0%	4.0%	11.0%	No	
27 TACOMA		Yes		Yes	Yes		1.0%	32.0%	22.0%		45.0%	No	
28 DALLAS		Yes	Yes			Yes	26.0%	48.0%	19.0%	7.0%		Yes	5% OFF FOR PROMPT PAYMENT
29 ANNE ARUN		Yes		Yes	Yes			53.0%	16.0%	8.0%	23.0%	No	

AWWA RATE SURVEY

	CUSTOMER BREAKDOWN/COUNT											RETAIL CUSTOMER DATA						
	WHOLESALE	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		NON-PROFIT	PUBLIC	UNACCOUNTED WATER	HAVE LEAKAGE ESTIMATE	LEAKAGE IN TRANSMISSION SYSTEM	LEAKAGE IN DISTRIBUTION SYSTEM	TOTAL POPULATION SERVED	TOTAL HOUSEHOLDS SERVED	HOUSEHOLDS W/ RESIDENTS AGE 62 & UP	MEDIAN HOUSEHOLD INCOME	%-HOUSEHOLDS BELOW POVERTY LEV.
		SINGLE FAMILY (%)	MULTI-FAMILY (%)	SMALL (%)	MED./LARGE (%)	SMALL (%)	MED./LARGE (%)	(%)	(%)	(%)	(?)	(%)	(%)					
1 PHILA.	4.2%	29.8%	4.8%	2.4%	6.2%		6.1%		11.5%	35.0%	Yes			1,813,210	485,000	152,424	13,169	15.6%
2 ATLANTA		30.0%	20.0%	10.0%	10.0%	2.0%	13.0%		10.0%	5.0%		0%	5%					
3 SD. CAL.	100.0%										Yes	2%						
4 SEATTLE		33.0%	11.0%	3.0%	12.0%		10.0%		10.0%	20.0%	Yes	4%	16%	550,000				
5 OAHU	0.0%	88.0%	5.0%	[5%	]	[1%	]		1.0%		Yes	10%	10%	859,800	118,900	84,000	21,000	7.5%
6 ANCHORAGE		74.0%	12.0%	7.0%	2.0%	0.0%	0.0%		0.0%	5.0%	Yes	3%	3%	185,600	34,000			
7 TUCSON	1.9%	48.6%	15.6%	2.8%	20.6%		2.5%			8.0%	No			500,000				
8 TAMPA											No			425,000	100,000	50,000	13,000	13.0%
9 EAST BAY	0.0%	85.0%	7.0%	[4%	]	[2%	]	2.0%			Yes		8%	1,100,000	320,000	N/A	N/A	N/A
10 FT WORTH	0.1%	85.9%	2.3%	[10.2%	]	[. 2%	]					[16%	]	N/A	N/A	N/A	N/A	N/A
11 LOUISVILL	0.2%	[86.5%	]	[5.8%	]	[. 2%	]	1.3%	6.2%	14.0%	Yes			683,109	188,495	N/A	N/A	N/A
12 MEMPHIS	1.0%	[90%	]	[8%	]				1.0%	14.0%	No			700,000				
13 KNOXVILLE	0.0%	[94%	]	[5%	]	[1%	]			8.3%	Yes	[8.3%	]	195,000	58,200			
14 NEW YORK	7.0%	20.0%	26.0%	[13%	]	[4%	]	[30%	]		Yes	N/A	9%	7,000,000	2,803,000	N/A	N/A	N/A
15 SAN BERN.		57.0%	29.0%	12.0%		0.5%			1.5%	6.0%	No			104,222	41,746	9,081	15,913	18.5%
16 TULSA	0.0%	87.8%	3.4%	8.2%	0.4%	0.0%					Yes		4%	376,531	111,442			
17 DETROIT	59.0%	N/A	N/A	N/A	N/A	N/A				13.0%	Yes	45%	55%	1,190,000	300,000	N/A	N/A	N/A
18 HARTFORD	1.0%	[92.8	]	[4.4%	]	[. 7%	]	0.9%	1.1%		Yes	1-2%	5%	400,000	87,000		27,100	
19 NORFOLK	45.0%	10.0%	6.0%	8.0%	5.0%	3.0%	10.0%		13.0%	7.0%	Yes	6%	3%	280,000	88,170	17,190	19,850	16.4%
20 SALT LAKE											No			264,000	79,000			
21 AKRON											No			265,000	73,000			
22 BIRMINGHAM										16.0%	Yes	16%	16%					
23 KANSAS CY	14.0%	25.0%	--	1.0%	15.0%	1.0%	19.0%	0.0%	11.0%	14.0%	Yes	20%	80%	448,000	126,000	36,000	16,000	17.0%
24 LOS ANG.											Yes	[97%	]	3,200,000				
25 PORTLAND	0.1%	89.0%		9.4%		1.5%				0.0%	Yes	10.0%	17.0%	660,000				
26 DENVER	23.0%	[68%	]	[9%	]	[. 1%	]		0.5%					900,000	166,706			
27 TACOMA		86.0%	7.0%	[6%	]				1.0%		No			150,000	67,000	15,410	14,546	10.6%
28 DALLAS	(1%	87.0%	3.0%	[9%	]	[(1%	]		(1%		Yes	[10-12%	]	941,700	388,000		26,519	
29 ANNE ARUN											Yes	[11%	]	180,000	57,929		34,669	5.8%

AMWA RATE SURVEY

	REVENUE SOURCES						
	USER CHARGES BASED ON METER READ.	FLAT RATE CHARGES (UNMETERED)	FRONTAGE ASSESSMENTS	PROPERTY TAXES	SYSTEM DEVELOPMENT CHARGES	OTHER CHARGES	OTHER (DESCRIBE)
1 PHILA.	75.0%				17.0%	8.0%	
2 ATLANTA	100.0%						
3 SD. CAL.							
4 SEATTLE	90.0%		2.0%			8.0%	
5 OAHU	83.6%	1.5%			4.9%	10.0%	MISC
6 ANCHORAGE		40.0%	60.0%				
7 TUCSON	90.0%					10.0%	
8 TAMPA	67.0%	3.0%	0.0%	0.0%	12.0%	18.0%	
9 EAST BAY	53.0%	11.0%	8.0%	4.0%	5.0%	19.0%	
10 FT WORTH	90.0%					10.0%	FEES AND INTEREST
11 LOUISVILL	93.0%					7.0%	
12 MEMPHIS	100.0%						
13 KNOXVILLE	92.0%	1.0%				7.0%	
14 NEW YORK	33.0%	67.0%					
15 SAN BERN.	79.0%	1.0%			17.0%	3.0%	INTEREST, MISC.
16 TULSA	97.0%					3.0%	
17 DETROIT	100.0%						
18 HARTFORD	90.0%					10.0%	INTEREST
19 NORFOLK	100.0%						
20 SALT LAKE	98.0%				2.0%		
21 AKRON	100.0%						
22 BIRMINGHM	100.0%						
23 KANSAS CY							
24 LOS ANG.							
25 PORTLAND	99.0%				1.0%		
26 DENVER	61.0%	15.0%	0.0%	0.0%	24.0%		
27 TACOMA	48.0%	48.0%			4.0%		
28 DALLAS	100.0%						
29 ANNE ARUN	52.0%		12.0%	7.0%	17.0%	12.0%	WATER & WASTEWATER INCL

		CURRENT PERIOD O & M BUDGET												
	END OF CURRENT BUDGET PER.	SOURCE OF SUPPLY ($)	WATER TREATMENT ($)	TRANSMISSION & DISTRIB. ($)	CUSTOMER ACCOUNTS ($)	ADMIN. ($)	DIR. CAPITAL OUTLAYS ($)	DEBT SERVICE ($)	PILOT OR SIMILAR PAY. ($)	BUDGETED SURPLUS ($)	OTHER ($)	OTHER (DESCRIBE)	OTHER ($)	OTHER (DESCRIBE)
1 PHILA.	30-Jun-86	N/A	13,191,000	28,473,000	5,560,000	10,018,000	1,865,000	26,265,000	N/A	N/A	5,000,000	PAYMENT TO OTHER CITY AGENCIES		
2 ATLANTA	31-Dec-86		8,217,777	16,332,586	3,116,246	762,369	44,963,080				2,504,026	TECHNICAL SERVICES		
3 SO. CAL.	30-Jun-86	10,278,000	25,054,000	23,395,000		9,922,000					2,571,000	O&M	1,835,000	EQUIP MAINT
4 SEATTLE		2,329,000	2,078,000	7,285,000	1,619,000	5,857,000	4,355,000	3,935,000	3,616,000	3,727,000				
5 OAHU	30-Jun-87	367,959	143,979	8,837,957	2,521,849	11,504,546	29,017,300	5,692,600	0	8,608,400	10,223,710	POWER & PUMPING		
6 ANCHORAGE	30-Jun-86	1,740,490	1,377,730	3,886,060	1,435,140	4,015,480	56,000,000	6,496,000	1,115,300	486,000				
7 TUCSON	30-Jun-87	7,413,510	552,740	4,169,640	4,367,050	4,013,210	12,900,000	14,868,140	738,770	0	1,907,610	PLANNING & ENG		
8 TAMPA	30-Jun-86	0	1,700,000	5,700,000	1,100,000	5,800,000	8,000,000	4,100,000	0	7,000,000				
9 EAST BAY	30-Jun-87	3,060,000	6,900,000	23,540,000	6,130,000	40,300,000	85,330,000	30,800,000	0	1,200,000	740,000	POWER GENERATION	1,770,000	REC AREAS
10 FT WORTH	30-Sep-86	12,800,000	4,230,000	8,740,000	1,590,000	1,360,000	8,110,000	9,230,000	3,520,000	0	870,000	ENGINEERING		
11 LOUISVILL	31-Dec-86	4,735,000	3,910,300	8,314,000	3,742,000	4,665,200	10,504,972	5,042,600	0	5,380,300	488,500	RETIREMENT ASSETS		
12 MEMPHIS	30-Jun-86	550,330		242,952	220,758	397,839								
13 KNOXVILLE	30-Jun-86	26,302	2,728,744	3,740,917	1,488,682	2,732,160	3,753,000	647,000						
14 NEW YORK	30-Jun-87	9,623,100	3,574,000	5,583,300		2,037,500					18,573,400	TAXES, ENG. & OTHER	24,449,970	QUAL CONTROL & MAINT
15 SAN BERN.	30-Jun-86	1,078,340	42,165	1,169,855	1,562,760	346,290	252,800			303,100	430,210	10% TRANSFER TO CITY	63,900	MISC
16 TULSA	30-Jun-87	3,413,646	6,868,942	6,764,924	2,460,101	12,500,029	4,674,145	4,500,290		317,398				
17 DETROIT	30-Jun-87	678,100	34,006,000	31,033,300	4,500,700	10,814,400	4,390,000	16,821,000			2,492,000	CAPITAL CONTINGENCY FUND		
18 HARTFORD	31-Dec-86	5,200,000	1,800,000	4,200,000	1,100,000	4,400,000	1,500,000	5,000,000			2,500,000	PROP TAX, REC		
19 NORFOLK		[----------9048000---]		3,046,000	1,663,000	1,059,000	5,343,000	7,873,000		3,000,000	3,400,000	PAYMENT TO GENERAL FUND		
20 SALT LAKE	30-Jun-87	1,245,485	2,639,868	4,968,804	1,716,731	1,371,565	3,219,231	2,800,000	0	150,000				
21 AKRON	31-Dec-86	1,757,910	3,721,860	5,409,350	2,764,690	1,566,130	4,852,500	2,808,000						
22 BIRMINGHM	31-Dec-85	3,967,334	2,280,472	3,612,892	1,607,010	3,289,405	6,747,927	9,435,848	863,003		4,746,503	POWER & PUMPING		
23 KANSAS CY	30-Apr-87	[----------11936000---]		6,929,000	2,182,000	1,823,000	887,000	3,688,000			3,402,000	READING & SERVICE	6,440,000	CAP'L IMP & ENG SRVS
24 LOS ANG.		40,000,000	10,000,000	54,000,000	18,000,000	16,000,000	109,000,000	35,000,000	10,500,000		40,000,000	PAY-AS-YOU-GO CONSTR		
25 PORTLAND	1986-87	2,377,669		1,208,654	1,074,564	1,176,697					10,004,449	GENERAL OPERATIONS		
26 DENVER	31-Dec-86	2,713,000	6,891,000	7,201,000	3,430,000	19,455,000	5,200,000	29,812,000			3,649,000	GENERAL PLANT & EQUIP		
27 TACOMA	31-Dec-86	1,103,000	382,000	49,195,000	987,000	3,250,000	6,084,000	818,250			2,497,770	TAXES	463,000	PUMPING
28 DALLAS	30-Sep-87	2,822,000	11,354,000	34,387,000	2,572,000	3,760,000	6,210,000	39,615,000	0	0	19,168,000	CAPLTD ENG, DESIGN & CONSTR		FIGURES INCL WASTEWATER
29 ANNE ARUN	30-Jun-87	5,999,090				527,690	253,940							

	OUTSTANDING BONDS DATA						TYPICAL QUARTERLY BILLS (TOTAL)				
	GENERAL OBLIGATION BONDS		REVENUE BONDS		MINIMUM CHARGE FOR METERED ACCTS ($)	AMOUNT & BASIS OF CHARGES	LOW USAGE RESIDENTIAL ($)	HIGH USAGE RESIDENTIAL ($)	LOW USAGE COMMERCIAL ($)	HIGH USAGE COMMERCIAL ($)	INDUSTRIAL ($)
	ANNUAL DEBT SERVICE	FACE AMT OUTSTANDING	ANNUAL DEBT SERVICE	FACE AMT OUTSTANDING							
1 PHILA.	7,244	42,970	19,021	160,783			44.05	81.50	175.20	328.25	
2 ATLANTA	0	0	5,200,000	48,823,000	Yes	$3.35 PER 3/4" METER	62.58	130.41	334.41	549.24	
3 SD. CAL.	44,033,000	549,700,000	27,800,000	356,300,000							
4 SEATTLE	NONE	NONE	4,200,000	3,800,000	Yes	$1.40 PER 5/8 METER	28.80	56.40	83.01	157.89	3,267.99
5 OAHU	4,855,600	25,838,000	1,384,800	4,440,000	No		28.95	54.15	129.75	255.75	315.75
6 ANCHORAGE	2,149,051	55,114,373	2,662,000	50,195,000	No		58.80	117.60	294.60	588.00	4,410.00
7 TUCSON	4,300,000	22,000,000	9,200,000	91,000,000	Yes	FIRST 5CCF @ .86	54.90	107.61	280.17	444.84	920.82
8 TAMPA	0	0	3,700,000	39,600,000	Yes	$1.50 PER 3/4" METER	68.70	132.90	343.50	705.00	1,717.50
9 EAST BAY	14,539,000	107,224,000	18,465,000	250,365,000	Yes	$3.50 PER 5/8" METER	37.14	73.53	173.40	326.85	1,068.15
10 FT WORTH	0	0	9,226,761	79,379,000	Yes	$2.40 PER 5/8" METER	52.40	102.24	244.90	478.00	7,994.00
11 LOUISVILL	0	0	6,405,009	75,550,412	Yes	$3.01 PER 5/8-3/4" METER	36.78	85.74	208.50	402.21	7,904.73
12 MEMPHIS			3,000,000	56,000,000	Yes	$2.12 PER 5/8" METER	20.49	39.78	124.53	227.55	2,867.73
13 KNOXVILLE	0	0	1,500,000	13,975,000	Yes	$6.25 FOR FIRST 300CF PER MO	67.95	167.91	394.71	713.88	7,418.33
14 NEW YORK	136,000,000	1,076,000,000	48,600,000	196,000,000	Yes	13.7CU FT PER DAY ($.10)	29.00	58.00	145.00	290.00	7,250.00
15 SAN BERN.			259,150	2,600,000	Yes	$3 PER 5/8" METER 500CF ALLOW	17.68	38.67	94.32	175.08	3,800.13
16 TULSA			4,500,290	31,000,000	Yes	$3.60 PER 5/8-3/4" METER	41.40	78.09	166.56	318.27	6,360.06
17 DETROIT			15,300,000	145,385,000	Yes	$2.16 PER QUARTER, NO ALLOW	16.12	33.32	75.54	142.62	2,709.60
18 HARTFORD	5,039,118	36,547,150			Yes	$4.58 PER 5/8" METER	38.17	70.97	178.36	342.36	6,751.98
19 NORFOLK		58,548,160			Yes	$6.50 PER 5/8" METER PER/QTR	47.75	87.25	211.32	389.21	7,964.93
20 SALT LAKE			2,822,000	31,000,000	Yes	$5.50 PER 3/4x1" METER,+1000CF	20.30	35.50	112.60	212.60	4,262.60
21 AKRON	717,580	7,850,910	1,682,480	13,430,000	Yes	$2.02 BILLING CHARGE PER MONTH	54.46	116.11	245.96	451.06	9,857.06
22 BIRMINGHM	0	0	3,034,651	36,395,000	Yes	$2.20 PER 5/8" METER	35.73	76.29	169.29	317.49	7,141.35
23 KANSAS CY			3,688,000	23,649,000	Yes	$9.00 PER 5/8" MTR PER 60 DAYS	41.19	75.51	163.23	281.46	5,479.47
24 LOS ANG.	0	0	34,600,000	348,800,000	Yes	$4.50 PER MONTH BASE CHARGE	36.18	66.45	171.21	329.61	7,692.93
25 PORTLAND	10,549,317	93,555,000	0	0	Yes	$5.70 PER 5/8-3/4" MTR PER QTR	27.70	51.05	122.45	237.55	5,570.20
26 DENVER	20,000,000	279,000,000	0	0	Yes	$2.05 PER 5/8" METER PER MONTH	29.85	55.05	115.80	194.25	3,668.25
27 TACOMA			1,174,962	11,170,000	Yes	$5.62 PER 5/8" METER PER MONTH	33.89	69.28	106.95	258.31	6,487.10
28 DALLAS	13,235,919	111,690,000	26,309,352	186,381,000	Yes	$1.29 SERVICE CHG PER 5/8" MTR	38.79	81.24	129.54	254.01	5,425.83
29 ANNE ARUN	17,491,656	169,059,089	0	0	Yes	$7.00 FOR FORST/50006 W 5/8"M	37.20	90.60	240.30	454.80	8,443.80

AMWA RATE SURVEY

	AVG RESIDENTIAL BILL DETACHED SINGLE FAMILY ($)	PER	AVG RESIDENTIAL BILL ALL RESID. PER UNIT ($)	PER	MEDIAN RESIDENTIAL BILL DETACHED SINGLE FAMILY ($)	PER	MEDIAN RESIDENTIAL BILL ALL RESID. PER UNIT ($)	PER	DELINQUENCY/ NONPAYMENT PROBLEMS	% OF DELINQUENT PAYMENTS OVER 90 DAYS	OVER 180 DAYS
1 PHILA.	29.88	QUARTER	34.60	QUARTER						3-5%	
2 ATLANTA			25.45	16CCF/MO					Yes	0-2%	
3 SD. CAL.											
4 SEATTLE	6.32	MONTH									
5 OAHU									Yes	6-10%	3-5%
6 ANCHORAGE	15.50	MONTH	11.75	MONTH	15.50	MONTH	15.5	MONTH	Yes	0-2%	0-2%
7 TUCSON	21.15	MONTH			17.69	MONTH			Yes	5%	1%
8 TAMPA									No		
9 EAST BAY	138.00	YEAR	94.00	YEAR	114.00	YEAR	78	YEAR	No		
10 FT WORTH	16.30	MONTH	NO UNIT BILLING				NO UNIT BILLING		No		
11 LOUISVILL	8.14	6000/MONTH			8.76	6600/MONTH			Yes	0%	
12 MEMPHIS			60.00	YEAR					Yes		
13 KNOXVILLE	11.17	MONTH							No	0-2%	
14 NEW YORK	102.00	YEAR	N/A		92.00	YEAR	N/A		No	N/A	N/A
15 SAN BERN.	9.29	MONTH							Yes		
16 TULSA	11.14	MONTH	50.19	MONTH					Yes		
17 DETROIT	64.48	YEAR							Yes		
18 HARTFORD	120.00	YEAR							No		
19 NORFOLK			34.35	QUARTER					Yes	0-2%	
20 SALT LAKE	15.88	MONTH							Yes	0-2%	0-2%
21 AKRON									Yes		
22 BIRMINGHM											
23 KANSAS CY	15.00	MONTH	12.00	MONTH							
24 LOS ANG.	0.75	100CF			0.75	100CF			Yes	3-5%	0-2%
25 PORTLAND	6.85	MONTH							No		
26 DENVER	151.29	YEAR							No		
27 TACOMA	12.25	MONTH							Yes	(20%	6-10%
28 DALLAS	12.93	MONTH	12.93	MONTH					No	0-2%	0-2%
29 ANNE ARUN										0-2%	0-2%

AMWA RATE SURVEY

	COLLECTION METHODS										RATE DIFFERENTIALS IN-CITY/OUT-CITY				
	TURN OFF WATER		WRITE LETTER		TELEPHONE CALLS		COLLECTION AGENCIES		OTHER		RATE DIFFERENTIAL	AMT OF DIFFERENTIAL	OTHER	BASIS FOR	ANY LEGAL CHALLENGES TO DIFFERENTIAL
	AVAILABLE	USE	AVAILABLE	USE	AVAILABLE	USE	AVAILABLE	USE	AVAILABLE	USE	USED	%) IN-CITY	DESCRIBE	DIFFERENTIAL	(DESCRIBE)
1 PHILA.	Yes	Yes	Yes	Yes							Yes	100%		COST OF SERVICE CALC	
2 ATLANTA	Yes	Yes					Yes	Yes			Yes	@33%		HISTORIC	No
3 SD. CAL.															
4 SEATTLE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	@6%		COST SERVICE CALC	No
5 OAHU	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			No				
6 ANCHORAGE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No				
7 TUCSON	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No				
8 TAMPA											Yes	25%		STATE STATUTE	No
9 EAST BAY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	100%		HISTORIC	No
10 FT WORTH	Yes	Yes	Yes	Yes	Yes	Yes					Yes	100%		SPEC IN ORDINANCE	No
11 LOUISVILL	Yes	Yes	Yes	Yes			Yes	Yes			No		$0.17 FEE CUST NOT GRAV FED	COST OF SERVICE CALC	No
12 MEMPHIS		Yes		Yes							Yes	50%		HISTORIC & SEPARATE SYS.	
13 KNOXVILLE	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes	50%		COST OF SERVICE CALC	No
14 NEW YORK	Yes		Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	OUT-CITY WHOLESALE	10% OF IN-CITY RETAIL	HIST,COST OF SERV,ORD,EXCL.	COST-IN-CITY DISTR
15 SAN BERN.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No				
16 TULSA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	100%		COST OF SERV CALC	
17 DETROIT	Yes	Yes	Yes	Yes							Yes		VARIES BY COMMUNITY	COST OF SERVICE CALC	No
18 HARTFORD	Yes	Yes	Yes	Yes					Yes	Yes	No				
19 NORFOLK	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes	30% LESS	WHOLESALE	COST OF SERVICE CALC	
20 SALT LAKE	Yes	Yes	Yes	Yes			Yes	Yes			Yes	150%		COST OF SERV, STATUTE	No
21 AKRON	Yes	Yes							Yes	Yes	Yes	60%	COST OF SERVICE CALC		DIFF FOR CONTR & NON-CONT WHSLE CUST
22 BIRMINGHM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			No				FMR 3 ZONE RATE CHLGED & UPHLD
23 KANSAS CY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	17%		COST OF SERV, STATUTE	No
24 LOS ANG.	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	VARIABLE	DIFF BTWN CITY & PURCH	COST OF SERVICE CALC	No
25 PORTLAND	Yes	Yes	Yes	Yes	Yes	Yes					Yes	38% LESS	ONLY WHOLESALE		No
26 DENVER	Yes	Yes	Yes	Yes							Yes	UP TO 200%		COST OF SERVICE CALC	
27 TACOMA	Yes	Yes	Yes		Yes		Yes	Yes			Yes	20.0%		COST OF SERVICE CALC	No
28 DALLAS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No				
29 ANNE ARUN	Yes	Yes							Yes	Yes	No				

	WHO OWNS / MAINTAINS METER	WHO IS RESPONSIBLE TO READ METER	HOW OFTEN ARE METERS READ	No. OF METER IN SYSTEM (IN-CITY)	No. OF METER IN SYSTEM (OUT-CITY)	METHOD OF READING METERS: REMOTE (%)	PART REMOTE (%)	MANUAL (%)	SIZE OF METER READING CREW: RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER	AVERAGE No. OF METERS READ PER DAY: RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER	TYPICAL RANGE OF EST. READS (%)
1 PHILA.	UTILITY	UTILITY	QUARTERLY	505,691	1			Yes	1				200-225				11-20%
2 ATLANTA	UTILITY	UTILITY	BI-& MONTHLY	102,000	25,000			100%	17								0-1%
3 SO. CAL.	N/A	N/A	N/A														
4 SEATTLE	UTILITY	UTILITY	MONTHLY	[------17000----------]				100%	8	8	8	8					(20%
5 OAHU	UTILITY	UTILITY	BI-& MONTHLY	59,267	73,773			100%									0-1%
6 ANCHORAGE	UTILTIY	UTILITY	MONTHLY	5,440		X	X		[----------	4---------]			115				0-1%
7 TUCSON	UTILTIY	UTILITY	MONTHLY	100,750	41,727			100%	[----------	12---------]			[----------	358---------]			2-5%
8 TAMPA	UTILTIY	DEPT OF REV.& FIN	BI-MONTHLY	85,225	23,182		100%		11	11	11		386	12	2		20%
9 EAST BAY	UTILITY	UTILITY	BI-MONTHLY	336,902				100%	READERS ASSIGNED ROUTES W/ALL TYPES OF ROUTES				[----------	400---------]			0-1%
10 FT WORTH	UTILITY	UTILITY	MONTHLY	150,000			100%		[----------	VARIES---------]			[--------512, NO DISTINCTION-------]				2-5%
11 LOUISVILL	UTILITY	UTILITY	BI- & MONTHLY	86,910	118,000		100%			1	1	2	500	500	200		2%
12 MEMPHIS	UTILITY	UTILITY	MONTHLY	[----------203093-----]			100%			1							
13 KNOXVILLE	UTILITY	UTILITY	MONTHLY	53,645	4,555		100%			1	1	1	[-----175 PER DAY, COMBINED ROUTES ---]				0-1%
14 NEW YORK	CUSTOMER	UTILITY	SEMI-ANNUALLY	171,000	110			100%	1	1	1		60	60	60	60	)20%
15 SAN BERN.	UTILITY	UTILITY	MONTHLY	34,000	N/A			100%	7	7	7	7	236	30	1	7	
16 TULSA	UTILITY	UTILITY	MONTHLY	124,562	4,914		100%		[----------22--------]		2	0	[----------360--------]		197	0	0-1%
17 DETROIT	UTILITY	UTILITY	MONTHLY & QTRLY	310,000	300			100%	1	2	2	2	300	75	75	40	
18 HARTFORD	UTILITY	CUST & UTILITY	MONTHLY & QTRLY	[----------87000------]				100%	8	3		1	[----------	100-----]			(20%
19 NORFOLK	UTILITY	UTILITY	MONTHLY & QTRLY	63,000	92,000	1%		99%	2	2	2	2	[----------	175---------]			0-1%
20 SALT LAKE	CUST / UTIL	UTILITY	BI & MONTHLY	51,705	29,837			100%	9	2			270	191			
21 AKRON	CUST / UTIL	UTILITY	QTRLY, INDUS WKLY	78,000	6,000		99%	2%	13		2		173		90		13%
22 BIRMINGHM	UTILITY	UTILITY	BI-MONTHLY				100%		1	1	1		[----------	350---------]			0-1%
23 KANSAS CY	UTILITY	UTILITY	RES BI-MONTHLY	140,000				100%	1	1	1		300	150	150		(20%
24 LOS ANG.	UTILITY	UTILITY	RES BI-MONTHLY	655,700	5,000		Yes	Yes	1				90	[----------10--------]			2-5%
25 PORTLAND	CUST / UTIL	UTILITY	RES QTRLY	140,000				100%	12	2			260	145	145		0-1%
26 DENVER	CUST / UTIL	UTILITY	BI-MONTHLY	49,708	109,374		100%		26	26	26	26	[----------	250---------]			0-1%
27 TACOMA	CUST / UTIL	UTILITY	RES BI-MONTHLY	55,000	16,900			100%				17	[----------	273---------]			0-1%
28 DALLAS	UTILITY	UTILITY	MONTHLY	[--------278,000-----]			X	X					[----------	300-400---------]			0-1%
29 ANNE ARUN	UTILITY	UTILITY	MONTHLY & QTRLY		61,000	1%		99%	1	2	2		185	67	67		0-1%

CAPITAL IMPROVEMENT PROGRAM EXPENDITURES

	FISCAL YEAR 1987						FISCAL YEAR 1988						FISCAL YEAR 1989					
	SOURCE OF SUPPLY ($000)	TREATMENT ($000)	TRANSMISSION ($000)	DISTRIBUTION ($000)	OTHER ($000)	OTHER (DESCRIBE)	SOURCE OF SUPPLY ($000)	TREATMENT ($000)	TRANSMISSION ($000)	DISTRIBUTION ($000)	OTHER ($000)	OTHER (DESCRIBE)	SOURCE OF SUPPLY ($000)	TREATMENT ($000)	TRANSMISSION ($000)	DISTRIBUTION ($000)	OTHER ($000)	OTHER (DESCRIBE)
1 PHILA.		2,800.00	450.00	15,000.00				1,600.00	1,500.00	18,750.00	800.00	STORAGE		250.00	525.00	18,500.00		
2 ATLANTA	7,425.00	18,550.00	6,545.00	21,131.00			8,200.00	13,651.50	7,200.00	21,994.00			2,250.00	10,125.00	2,225.00	5,172.30		
3 SD. CAL.					38,000.00	TOTAL					87,000.00	TOTAL					99,000.00	TOTAL
4 SEATTLE	2,820.00	99.00	11,054.00	3,901.00	6,201.00	STORAGE	109.00	100.00		9,959.00	5,019.00	STORAGE	454.00	755.00		12,886.00	3,567.00	STORAGE
5 OAHU	12,088.00		1,033.00	2,735.00	6,779.00	STRG & SUPP	8,173.00		25,050.00	3,000.00	1,507.00	STRG & SUPP	18,020.00		20,434.00	3,000.00	8,126.00	STRG & SUPP
6 ANCHORAGE	1,220.00	550.00	860.00	12,500.00	5,430.00	IMPR & MAINT	1,090.00	550.00	8,060.00	9,850.00	4,055.00	IMPR & MAINT	20.00	550.00	4,105.00	7,350.00	3,765.00	IMPR & MAINT
7 TUCSON	14,927.00	9,866.00	3,041.00	8,199.00	1,300.00	IMPR & MAINT	12,663.00	17,081.00	14,985.00	7,704.00	901.00	IMPR & MAINT	9,223.00	21,370.00	13,063.00	10,219.00	929.00	IMPR & MAINT
8 TAMPA		900.00	500.00	5,087.00			1,980.00	1,400.00		6,390.00			310.00	2,350.00	650.00	7,060.00		
9 EAST BAY	1,140.00	7,500.00	5,410.00	36,200.00	31,220.00	IMPR & MAINT	870.00	9,640.00	4,120.00	34,690.00	34,140.00	IMPR & MAINT	500.00	8,620.00	2,370.00	31,780.00	23,600.00	IMPR & MAINT
10 FT WORTH		2.30	5.00	1.70				3.00	4.65	3.70				10.00	2.55	5.20		
11 LOUISVILL	104.30	1,700.00	1,569.40	4,482.00	3,176.30		75.90	2,029.00	1,578.40	4,290.00	3,609.70		402.80	2,254.60	1,586.40	4,278.10	3,643.60	
12 MEMPHIS																		
13 KNOXVILLE	0.00	645.00	[----------3,640------]					611.00	[----------3,389------]					386.00	[----------3,614------]			
14 NEW YORK	15,026.00	64,250.00	[----------155,632-----]		13,500.00	CITY TUNNEL	29,192.00	0.00	[----------241,886-----]		109,010.00	CITY TUNNEL	17,341.00	0.00	[----------101,963-----]		332,045.00	CITY TUNNEL
15 SAN BERN.	50.00	100.00	100.00	150.00			175.00	100.00	100.00	150.00			175.00			150.00		
16 TULSA	2,350.00	9,512.00	[----------11,175------]		650.00		3,100.00	0.00	[----------3,958------]		278.00		323.00	1,433.00	[----------8,542------]		192.00	
17 DETROIT					45,953.00	TOTAL					37,688.00	TOTAL					41,438.00	TOTAL
18 HARTFORD					650.00	TOTAL					900.00	TOTAL					1,500.00	TOTAL
19 NORFOLK		2,075.00	6,375.00	3,585.00	1,800.00	OPER BLDG	2,500.00	2,000.00	1,200.00	6,220.00						3,465.00		
20 SALT LAKE			2,000.00	400.00					3,000.00	300.00						300.00		
21 AKRON	164.00	134.00	[----------4,949------]		17.00	UTIL SERV	240.00	744.00	[----------3,529------]		17.00	UTIL SERV	204.00	48.00	[----------3,703------]		17.00	UTIL SERV
22 BIRMINGHM		4,000.00	3,760.00	8,280.00	8,350.00	LAND ACQ		2,600.00	5,800.00	8,600.00	350.00	LAND ACQ		185.00	3,595.00	8,515.00	350.00	LAND ACQ
23 KANSAS CY	0.00	1,000.00	2,000.00	900.00	900.00	FACILITIES	250.00	1,000.00	1,750.00	1,050.00	950.00	FACILITES	300.00	1,000.00	1,700.00	1,100.00	950.00	FACILITIES
24 LOS ANG.	11,600.00	20,600.00	[----------64,900------]		16,200.00	FLEET & SERV	15,900.00	9,000.00	[----------79,100------]		9,300.00	FLEET & SERV	12,500.00	19,800.00	[----------80,200------]		14,600.00	FLEET & SERV
25 PORTLAND	74.00	1,571.00	1,762.00	2,091.00	1,351.00		74.00	1,670.00	1,717.00	2,080.00	1,160.00		235.00	0.00	2,780.00	1,884.00	1,349.00	
26 DENVER																		
27 TACOMA	2,120.00	978.50	125.00	3,178.50	954.35	GEN'L PLANT	1,411.00	987.43	2,526.25	2,249.93	207.07	GEN'L PLANT	2,735.25	996.80	2,125.56	2,322.92	284.92	GEN'L PLANT
28 DALLAS	1,314.00	2,738.00	22,525.00	4,028.00	2,254.00		4,870.00	15,003.00	15,699.00	6,020.00	10,050.00		17,319.00	41,618.00	25,150.00	10,197.00	2,251.00	
29 ANNE ARUN					14,448.35	TOTAL					8,082.00	TOTAL					7,971.80	TOTAL

CAPITAL IMPROVEMENT PROGRAM EXPENDITURES

	FISCAL YEAR 1990						FISCAL YEAR 1991					
	SOURCE OF SUPPLY ($000)	TREATMENT ($000)	TRANSMISSION ($000)	DISTRIBUTION ($000)	OTHER ($000)	OTHER (DESCRIBE)	SOURCE OF SUPPLY ($000)	TREATMENT ($000)	TRANSMISSION ($000)	DISTRIBUTION ($000)	OTHER ($000)	OTHER (DESCRIBE)
1 PHILA.		700.00		18,500.00					1,000.00	18,300.00		
2 ATLANTA	250.00	0.00	600.00	8,832.70			0.00	11,400.00	0.00	0.00		
3 SD. CAL.					46,000.00	TOTAL					33,000.00	TOTAL
4 SEATTLE	950.00	1,138.00		9,261.00	1,568.00	STORAGE	1,246.00	4.00	5,983.00	1,439.00		STORAGE
5 OAHU	16,351.00		19,789.00	3,000.00	16,132.00	STRG & SUPP	25,629.00		34,603.00	3,000.00	1,489.00	STRG & SUPP
6 ANCHORAGE	0.00	550.00	5,255.00	6,800.00	3,790.00	IMPR & MAINT	0.00	550.00	3,700.00	3,000.00	3,630.00	IMPR & MAINT
7 TUCSON	9,292.00	19,281.00	15,738.00	8,475.00	956.00	IMPR & MAINT	13,407.00	2,430.00	7,090.00	9,443.00	985.00	IMPR & MAINT
8 TAMPA		300.00	2,100.00	7,233.00				2,700.00		7,409.00		
9 EAST BAY	200.00	7,630.00	950.00	27,140.00	7,600.00	IMPR & MAINT	170.00	4,710.00	780.00	17,310.00	2,130.00	IMPR & MAINT
10 FT WORTH		10.00		5.35			N/A	N/A	N/A	N/A	N/A	
11 LOUISVILL	29,800.00	2,486.00	1,596.40	4,354.50	4,310.80		31.20	2,610.30	2,533.00	4,827.80	3,414.10	
12 MEMPHIS												
13 KNOXVILLE		185.00	[----------3,815-------]					185.00	[----------3,815-------]			
14 NEW YORK	28,430.00	33,100.00	[----------68,479-------]		425,000.00	CITY TUNNEL	36,284.00	0.00	[----------148,753------]		298,070.00	CITY TUNNEL
15 SAN BERN.	175.00			150.00			225.00			150.00		
16 TULSA	4,022.00	16,415.00	[----------31,855-------]		448.00		21,837.00		[----------10,583------]			
17 DETROIT					29,500.00	TOTAL					23,900.00	TOTAL
18 HARTFORD					1,500.00	TOTAL					1,500.00	TOTAL
19 NORFOLK				4,000.00					1,000.00	6,535.00		
20 SALT LAKE				300.00				4,000.00		300.00		
21 AKRON	318.00	123.00	[----------3,924-------]		17.00	UTIL SERV	174.00	156.00	[----------4,039-------]		17.00	UTIL SERV
22 BIRMINGHM			4,800.00	7,040.00	350.00	LAND ACQ	N/A	N/A	N/A	N/A	N/A	
23 KANSAS CY	300.00	1,000.00	2,000.00	1,400.00	350.00	FACILITIES	300.00	1,000.00	2,000.00	1,400.00	400.00	FACILITIES
24 LOS ANG.	4,300.00	17,200.00	[----------71,400-------]		7,000.00	FLEET & SERV	4,400.00	18,400.00	[----------71,000-------]		12,600.00	FLEET & SERV
25 PORTLAND	74.00	0.00	1,235.00	2,210.00	1,579.00		74.00	274.00	1,098.00	1,848.00	1,845.00	
26 DENVER												
27 TACOMA	1,851.76	1,006.64	28.94	2,381.57	62.92	GEN'L PLANT						
28 DALLAS	5,305.00	9,127.00	19,659.00	7,180.00	2,250.00		400.00		13,457.00	6,277.00	2,250.00	
29 ANNE ARUN					6,178.10	TOTAL					4,843.00	TOTAL

III. WATER RATE SURVEY INSTRUMENT

ASSOCIATION OF METROPOLITAN WATER AGENCIES

WATER RATE SURVEY

A. GENERAL

1. Organization Name: _____

2. Form Completed by: _____
   Title: _____ Telephone: _____

3. Organizational Structure
   - ____ Municipal Utility Department
   - ____ Municipal Authority
   - ____ Independent Authority
   - ____ State or District Authority
   - ____ Other (*describe*)

4. Services Provided
   - ____ Water only
   - ____ Water and Wastewater
   - ____ Other (i.e. Solid Waste, etc. - *describe*)

5. Which of the following elements of water service does your agency own and operate?
   - ____ Source of Supply
   - ____ Transmission
   - ____ Distribution
   - ____ Others (*describe*)

B. WATER SUPPLY SYSTEM

1. Current service area: Wholesale ____ square miles
   Retail ____ square miles

2. Residential population served: Wholesale _____
   Retail _____

3. Number of connections: _____

4. Please approximate system vintage. On a percentage basis, during which decades was the present system built? (in physical terms - not cost)

SUPPLY AND TRANSMISSION

Pre 1890	____%	1940-9	_____%
1890-9	____%	1950-9	_____%
1900-9	____%	1960-9	_____%
1910-9	____%	1970-9	_____%
1920-9	____%	1980-	_____%
1930-9	____%		

DISTRIBUTION

Per 1890	____%	1940-9	_____%
1890-9	____%	1950-9	_____%
1900-9	____%	1960-9	_____%
1910-9	____%	1970-9	_____%
1920-9	____%	1980-	_____%

5. a. Current system work force (number): _____. Does this include administration (shared with other functions)?
___ Yes ___ No

b. Work force breakdown:

AREA	% of WORK FORCE
Plant Operations	_____
Maintenance	_____
Engineering	_____
Finance	_____
Customer Service	_____
Administration	_____
Other (*describe*)	_____
_____	_____
_____	_____
_____	_____

6. Average daily water supplied (Total System): _____ MGD

7. Daily safe yield (considering supply, transmission and distribution): _____ MGD

8. Peak daily delivery: _____ MGD

9. Average daily consumption (gallons per capita/per day) ____ gallons

10. What are the principal sources of water?

	% of Total
Surface Impoundments (reservoirs)	_____
Groundwater	_____
Lakes/Rivers	_____
Don't know (purchased water)	_____
	100%

11. What types of treatment are utilized?

		Yes	No
1a.	**Disinfection:**		
	Chlorine	___	___
	Chlorine Dioxide	___	___
	Ozonation	___	___
	Combination	___	___
	Other _____	___	___
b.	**Viral Removal:**		
	Filtration	___	___
	Ozonation	___	___
	Other _____	___	___
c.	**Toxic Chemical Removal:**		
	Air stripping	___	___
	GAC	___	___
	Other _____	___	___
d.	**Turbidity Removal:**		
	Chemical Treatment	___	___
	Filtration	___	___
	Other _____	___	___
e.	**Taste and Odor:**		
	Chlorination	___	___
	Ozonation	___	___
	Other _____	___	___
f.	**Algae Removal:**		
	Filtration	___	___
	Micro Straining	___	___
	Other _____	___	___

g. **Color:**

Chemical Treatment	___	___
Filtration	___	___
Other _____	___	___

h. **Fluoridation:**

Fluosilsic Acid	___	___
Other _____	___	___

i. **Corrosion Control:**

Calcium Oxide	___	___
Sodium Carbonate	___	___
Other _____	___	___

12. Please describe your system (*check one or more, as appropriate*)

Flat	_____
Hilly	_____
High Density	_____
Low Density	_____
Cold Weather City	_____
Warm Weather City	_____

C. CUSTOMER DATA

1. Of the water supplied, what is the estimated percentage of water usage by user category?

Wholesale	_____%
Residential	_____%
Commercial	_____%
Industrial	_____%
Other _____	_____%

2. Do you offer a discount to any customers? ___ Yes ___No
   If *Yes*, please describe:

3. If available, please provide the following customer breakdown:

Wholesale	_____%
Residential - Detached Single Family	_____%
Multi-family Dwellings	_____%
Commercial:	
Small	_____%
Medium - Large	_____%

Industrial:
Small _____%
Medium - Large _____%

Non-Profit (*if not included above*) _____%
Public Purpose (government, etc. - if not included above) _____%
Unaccounted for Water _____%

4 a. Do you have a leakage estimate?
___Yes ___ No

b. If *Yes*, how much in the transmission system? _____%
How much in the distribution system? _____%

5. Please provide the following information for Retail customers:

- Total population served _____
- Total households served _____
- Households served with residents aged 62 or older _____
- Median household income _____
- Percent of households below poverty level _____

D. FINANCIAL

1. What percentage of system expenses (*operating, capital and debt service*) are paid for from the following?

User charges based on meter readings _____%
Flat rate charges (unmetered) _____%
Frontage assessments _____%
Property taxes _____%
System Development Charges _____%
Other (*describe*) _____ _____%

2. Please provide the current water system budget (for the period ending _____, 198___).

OPERATIONS AND MAINTENANCE:

Source of Supply $___
Water Treatment ____
Transmission and Distribution ____
Customer Accounts ____
Administration ____

OPERATIONS AND MAINTENANCE: (*continued*)

Direct Capital Outlays ____
Debt Service ____
PILOT or similar payment ____
Budgeted Surplus ____
Other (*describe*) ____

3. Please provide the following information on bond issues:

	Annual Debt Service	Face Amount Outstanding
General Obligation	$ _____	$ _____
Revenue	$ _____	$ _____

4. Please provide proposed expenditure information concerning your Capital Improvement Program for the next five years:

Fiscal Year ($K)

	1987	1988	1989	1990	1991
Type of Project:					
Source of Supply					
Treatment					
Transmission					
Distribution					
Other _____					

E. CUSTOMER BILLING DATA

1. a. Is there a minimum charge for metered accounts?
__Yes __No

b. If *Yes*, what is the charge and what is its basis?
(i.e. $10 for the first 0-10,000 gallons per quarter)

2. Please attach a copy of the current water rate schedule.

3. Below are five typical customers, their usage and meter size. Please compute their bill and show the computation.

Example: Residential - 5/8" meter/6,000 gallons per month

Meter charge (includes 3,000/month)	$6.00
$1 per additional 1,000 gallons	3.00
Monthly Charges	$9.00

a. Low usage - residential
5/8" meter/4,000 cubic feet or 30,000 gallons per quarter

b. High usage - residential
1" meter/8,000 cubic feet or 60,000 gallons per quarter

c. Low usage - commercial
1-1/2" meter/20,000 cubic feet or 150,000 gallons per quarter

d. High usage - commercial
2" meter/40,000 cubic feet or 300,000 gallons per quarter

e. Industrial
6" meter/1,000,000 cubic feet or 7,500,000 gallons per quarter

4. If available, please provide the following information:

Average Residential Bill:	
Detached Single Family	$_____ per____
All Residential (including multifamily) per dwelling unit	$_____ per____
Median Residential Bill:	
Detached Single Family	$_____ per____
All Residential (including multifamily) per dwelling unit	$_____ per____

5. a. Do you have delinquency/non-payment problems?
__Yes __No

b. If *Yes*, what is your percentage of delinquents?

	OVER 90 Days	OVER 180 Days
0-2%	_____	_____
3-5%	_____	_____
6-10%	_____	_____
11-20%	_____	_____
More than 20%	_____	_____

6. What collection methods are available and which do you use?

METHOD	AVAILABLE	USE
Turn off water	_____	_____
Write letter	_____	_____
Telephone calls	_____	_____
Collection agencies	_____	_____
Other _____	_____	_____

7. a. Is there a differential in the rates charged to outside city customers versus inside city customers?
___Yes ___No

b. If *Yes*, how much is it? ___% above in-city

Other (*describe*)

c. If *Yes*, what is the basis? _____ Historic
_____ Cost of Service calculation
_____ State statute/local ordinance
_____ Other (explain)

d. Have there been any legal challenges to the differential? Please describe

F. WATER METERS

1. If any portion of your system is metered, who owns and maintains the meter?
Customer _____
Utility _____
Other (*describe*) _____

2. Who is responsible for reading the meters?
   - Customer _____
   - Utility _____
   - Other (describe)

3. How often are meters read? (*if appropriate check more than one*)
   - Monthly _____
   - Quarterly _____
   - Semi-annually _____
   - Annually _____
   - Other _____

4. How many meters are in your system?
   - Inside City _____
   - Outside City _____

5. How are meters read?
   - Remote _____(provide percentage if partial use ____%)
   - Partial Remote _____ (i.e. handheld device, etc.)
   - Manually _____

6. How many employees make up one meter reading crew?
   - Residential _____
   - Commercial _____
   - Industrial _____
   - Other _____

7. How many meters are read per day by your average meter reader?
   - Residential _____
   - Commercial _____
   - Industrial _____
   - Other _____

8. What is the typical range of estimated reads?
   - 0-1% _____
   - 2-5% _____
   - 6-10% _____
   - 11-20% _____
   - More than 20% _____